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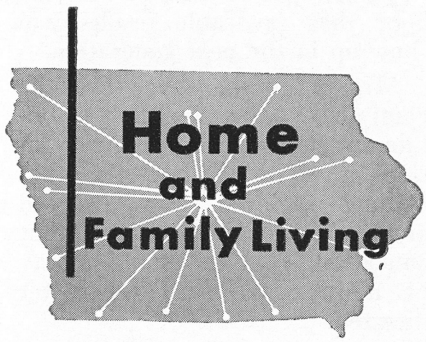
Your Experiment Station Reports

Iowa Farm Science Editorial Board

YOUR EXPERIMENT STATION REPORTS . . .



Study Basic Diet Needs

BASIC DIETARY requirements and adequate protein nutrition are being studied by research scientists of the Iowa Agricultural Experiment Station. Two problems are being studied in one project. The first deals with the protective influence of fat on the protein metabolism under poor nutritional conditions. The second concerns the role of amino acids in protein for the maintenance of nitrogen nutrition.

In a second project, researchers are investigating the role of protein when intakes of food energy are reduced.

Key personnel in the first project are Pearl Swanson, Hazel Fox, Emerson Bird and S. P. Yang. Charlotte Roderuck and Pilar Garcia are directing research for the second project.

How Do "Many Parents" Affect Child's Life?

ARE INFANTS who have had "multiple mothering" for a period of time adversely affected by this experience? (By "multiple mothering" we mean that more than two primary persons, male or female, care for the physical and psychological needs of an infant.) The answer to this question is one objective of a research study being conducted by the Iowa Agricultural Experiment Station in cooperation with several other agencies.

Present plans call for examining the relationship between the physical, personal and social adjustment of children as it relates to "multiple mothering." Key personnel in this program include Glenn R. Hawkes, Damaris Pease, Richard Lewis, Elizabeth Turner, Bruce Gardner and Richard McHugh.

School Children Need Better Diets

SCHOOL CHILDREN need more of certain agricultural commodities in the diets, reports Ercel S. Eppright of the Iowa Agricultural Experiment Station. If school children had more milk, more meat and more of certain kinds of fruits and vegetables, their diets would be less often lacking in calcium, vitamins A and C, and in protein and iron.

These conclusions resulted from a survey directed by Mrs. Eppright on the nutritional status of Iowa school children and have been confirmed in a current longtime study of about 200 girls. As the study continues, frequent observations are being made of children's diets, physical growth, blood constituents, activities, teeth and general health.

A supplementary nutrition study is also being conducted to learn whether a nutritious supplement consisting of the foods and nutrients observed to be most often lacking in the diets of Iowa school children can influence the nutritional status of children.

Processed forms of milk, such as frozen concentrate, have been successfully used to increase the children's total milk intake as much as 1 or 2 cups of fresh milk daily.

The extra food given at school, for a period of 14 weeks, has not resulted in undesirable weight changes in the children, even in those who are already classed as very heavy or obese. However, the positive effects of the supplement will be studied over a longer period of time to get more meaningful results.

Blood studies and medical examinations show that the girls in this program are in a fair to good state of nutrition. The information obtained from this study will be useful in evaluating the growth and development of other groups of girls. By following the food habits of the children over the age period of 8 to about 15 years, a better understanding of the origin, development and significance of the poor food habits of teen-agers may result.

The most common physical de-

fect observed among the children appears to be dental decay. Efforts are being made to learn the dietary conditions that accompany this, but the situation points most clearly to the need of long-time improvements of the diet with the hope that favorable results will show up in the next generation.

Mrs. Eppright says that the chief goal of this project is to obtain further evidence of the relationship of diet to health so that feeding children may proceed along more exact lines and that education for better nutrition may be more convincing and better directed.

Key personnel in this project include Ercel Eppright, Charlotte Roderuck, Emil Jebe, K. Wessels, M. Donnely, Pilar Garcia, Frances Clark and Ruth Balster.

Conduct Basic Nutrition Studies

SEVERAL basic nutrition studies on laboratory rats and guinea pigs are being conducted at the Experiment Station under the direction of Pearl Swanson, Charlotte Roderuck and Lotte Arnrich. The chief purpose of these studies is to understand nutritional processes in general, some of which can be applied to human beings.

Some of the particular problems under study include: the interrelationships of certain vitamins in maintaining normal growth and reproduction, the quantitative requirements of the vitamin B complex for normal reproduction and the influence of dietary fat on the quantity and distribution of fat deposits.

Test Effects Of Treatments On Egg Quality

MAINTAINING EGG quality through the marketing process is a major problem facing egg producers. Frances Carlin of the Experiment Station is studying the effects of dipping eggs in oil and of thermostabilization (heating shell eggs in oil) on egg keeping-quality. In these studies, determinations will be made of flavor and functional properties as well as of the effects on interior quality of the egg.

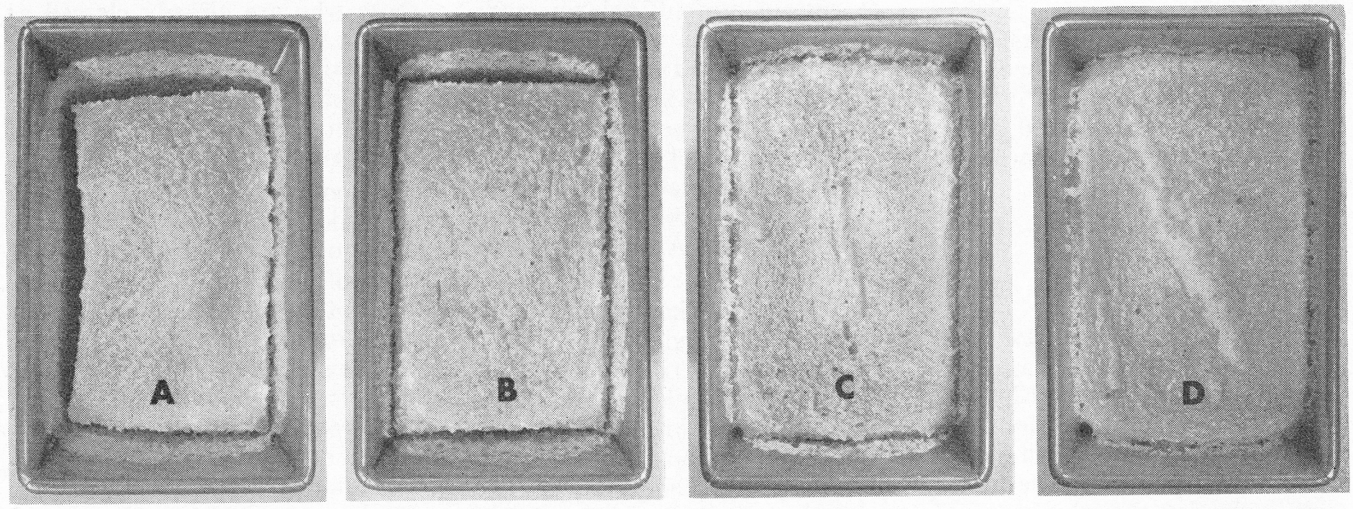
Preliminary results indicate that thermostabilization in oil at 160° F. for 1 minute or 152° F. for 2 minutes are effective means of preserving egg quality with little, if any, adverse effects on the foaming properties of the eggs. Thermostabilized eggs stored 8 weeks at room temperature still have the thick egg white which gives the "stand up" appearance of fresh eggs. Untreated eggs stored under the same conditions have only thin white after 3 weeks.

Whipping quality of the stored eggs was tested by baking angel cakes from the untreated and thermostabilized eggs and comparing the cakes. The volume of angel cakes made with thermostabilized eggs stored 8 weeks at 71° F. decreased only slightly compared to the volume of cakes made from fresh eggs. But cakes made with untreated eggs stored only 2 weeks at 71° F. not only decreased an average of 10 percent in volume but also shrank from the sides of the pan, causing a decrease in width. This shrinkage did not occur in cakes made with the thermostabilized eggs.

How Much Does Family Life Affect Child's Personality?

WHAT RELATIONSHIPS are there between the personal adjustment of children and such variables of family living as parents' acceptance of the children, marital adjustment of the parents and personality of the parents? To try to learn the answers to this question, Experiment Station researchers under the direction of Glenn R. Hawkes measured children's ideas of family control of behavior, parental acceptance of children, and marital adjustment and personality scales for parents.

Tests so far indicate that: (1) There is no meaningful relationship between parental acceptance scores of parents and personal adjustment scores of their children. (2) There is a small relationship



In testing the effects of different treatments of shell eggs on egg quality, angel cakes were used to compare whipping quality. These photos show the tops of the cakes and amount of shrinkage from the cakepans. All cakes were made with eggs stored at 70° F. for 8 weeks except "D" made from fresh eggs. "A"—untreated eggs; "B"—oiled eggs; "C"—eggs thermostabilized, 152° F. for 2 minutes.

between marital adjustment and acceptance scores on the part of fathers, and there is no meaningful relationship between marital adjustment and parental acceptance on the part of mothers. (3) There is an important relationship between the personality scores and the marriage adjustment scores of parents. (4) There is a relationship for fathers and mothers between personality scores and acceptance scores. (5) Mothers scored higher in acceptance of children than did fathers.

Another test was made to learn how well the child understands the degree to which his parents accept him. It was found that children's understanding of parental acceptance was related to their personal adjustment scores. Girls saw their parents as more accepting than did boys.

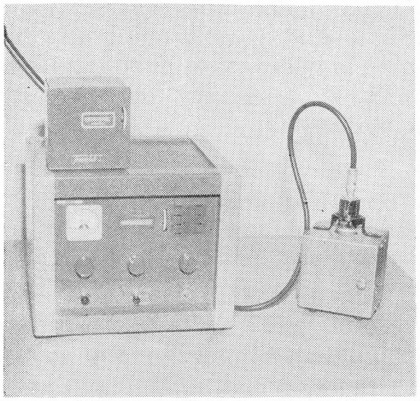
Children's ideas of family affection relationships also was measured. A meaningful relationship was found between the father-child affection tie and the personal adjustment of boys. The personal adjustment scores of girls were found to be related to the mother-child affection pattern.

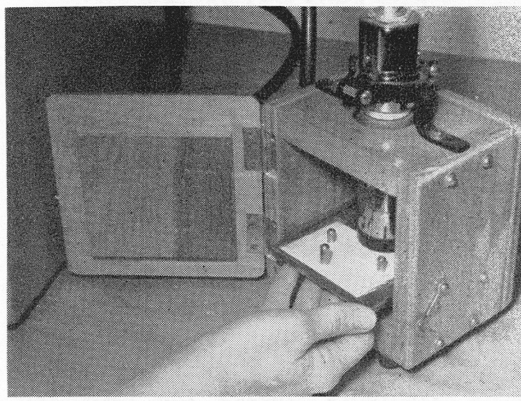
The child's idea of the position he holds in the family was also investigated. Girls were found to be more satisfied with their position than were boys. Children of lower intelligence were, on the average, more satisfied with their position than were brighter children.

What Distinguishes A Church Leader?

WHAT characteristics distinguish a church leader from other members of the community? This is one of the questions Experiment Station sociologists studied as part of a larger, over-all study of what community and family factors affect leadership and migration. Ray E. Wakeley, who is conducting this study, compared certain characteristics of elected or appointed church leaders in Polk County with the characteristics of other persons. Here's what he found:

- A higher proportion of leaders attended church meetings—and the leaders attended church more frequently.





LEFT: These are the instruments used in testing the efficiency of washers, washing agents and water in home laundering through measuring the amount of radioactivity in swatches. Used are a scaler, a timer and geiger tube. RIGHT: Placing swatch in geiger tube housing.

- The proportion of women who belonged to churches was larger than the proportion of men. However, there was not much difference between the proportions of men and women church leaders.

- The proportion of church members was largest among persons 45-64 and 15-24 years of age. Also, ages 15-24 and 45-54 were the most frequent church attenders. But ages 35-64 had the largest proportion of church leaders.

- Among occupational groups, persons doing their own housework, students and professional workers had the largest proportion of church members, attended church more often and had the larger proportion of church leaders.

- Church membership and attendance were highest among those people who hadn't moved during the previous 8 years. But leadership was not related in any meaningful way with change of residence.

- Farm people showed as large a proportion of church leaders as any other group.

New Method Reveals Clues for Laundering

WATER TEMPERATURES of 140° and 160° F. give best washing results—as compared with a temperature of 120° F. Also, 140° and 160° F. washwaters remove approximately the same amount of soil. These conclusions are the results of an experiment using radioactive materials to test the efficiency of washers, detergents and water in home laundering.

The two washers tested in this experiment gave about the same results. However, for each washer, soap with soft water gave better washing results than synthetic detergents with soft or hard water.

This experiment was conducted by Florence Ehrenkranz of the Experiment Station.

The most important aspect of this work, reports Miss Ehrenkranz, is that a method has been developed that uses a fatty soil of common occurrence synthesized to contain a radioactive component.

This is the first practical laboratory method for measuring how much natural soil *actually* is removed in home laundering. Earlier test procedures measure how much soil *appears* to be removed by light reflectance measurements.

The light reflectance method uses swatches having an artificial soil. The method, therefore, is of limited value—not only because it gives data on appearance rather than actual soil removal, but also because the data are for artificially soiled swatches, and artificial soil may not be removed in the same manner as natural.

The results reported here are the first using this method. It is anticipated that the method will be used here and in other laboratories for additional work on different aspects of home laundering.

Your Child Has Reasons For Clothing Choices

CHILDREN often have definite reasons for choosing the clothing they wish to wear on a particular day or for a particular occasion. They may not be able to express these reasons intelligently to an adult, but the reasons are very important to the child. These conclusions are based on a study conducted by the Iowa Agricultural Experiment Station on family attitudes toward the care and maintenance of children's clothing.

Children gave a variety of reasons for their choices. In general, appearance other than color was the first motivating reason for girls. For boys, color rated first, followed by comfort and appearance other than color. As the age of the child increased, his desire to be like other children his age became increasingly important. This was more true for girls than for boys.

When time records for the care of the test garments made of man-made fibers and those made of fabrics of natural fibers were compared, the advantage was in favor of the man-made fibers. For the boys, the natural-fiber group required 7.8 hours and the man-made fiber group 7 hours of care per 100 hours of wear. For the girls, the natural-fiber group required 8.6, the man-made fiber group 7 hours of care per 100 hours of wear.

More detailed information on this study was presented in the February and April 1956 issues of IOWA FARM SCIENCE.

In another study, research workers are examining family practices in selecting and using garments for boys 9 and 10 years old. This study aims to provide three kinds of information: (1) practices in selecting and using clothes worn by 9- and 10-year-old boys; (2) relationships among consumer needs, desires and satisfactions in use of these garments; and (3) how much the preferences of the 9- and 10-year-old boys agree with those of their mothers.

The following researchers are conducting the two studies: Glenn R. Hawkes, Elizabeth Beveridge, Margaret Warning, Fannie Potgieter, Opal Roberson and Emil H. Jebe. The study on clothes for 5-, 8- and 10-year-old boys and girls is being made in cooperation with E. I. duPont de Nemours Company.

Population Changes Bring Problems To Iowa Rural Areas

RURAL AREAS are faced with certain problems resulting from population changes. To study these problems and their causes is the goal of a North Central regional project conducted by the experiment stations of 13 North Central states.

For the Iowa part of the study, the population of each incorporated place in Iowa from 1900 to 1950 has been compiled. This information was prepared and published for use by educational and commercial leaders especially interested in Iowa development. Additional data show the growth or decline of each incorporated place and such related factors as distance to other population centers, communication, natural resources, level of living and industrialization. These will be basic to a more intensive analysis of growth and related factors.

Future plans call for compiling and analyzing information on the number, distribution and characteristics of all people moving within and between various economic areas of Iowa. This information will give the first picture of total migration for all areas in a state.

Ray E. Wakeley is conducting the Iowa phase of this North Central regional project in cooperation with the USDA.

Improved Diet May Improve Nutrition And Reduce Weight

OLDER WOMEN may lose weight on a well-balanced diet which is not extremely low in calories. And they may improve their nutritional status at the same time. This is suggested by recent studies of the nutrition of older people. The present studies give concrete evidence of the improvement in nutritional state that may be achieved by an improved diet.

Day-by-day studies over long periods of time on the use of protein, calcium and phosphorus by older women eating their own self-selected diets are disclosing facts about the bodily use of these nutrients not fully appreciated before. These facts will be important in estimating nutrient requirements for women as they grow older.

The studies are showing that the protein nutrition of women 50 years of age and over is variable. Some are making good the deficits of earlier years by storing large quantities of food protein in their bodies; others are losing body protein day after day. Still others, on the average, just balance body losses with food protein.

With calcium, continuous day-by-day storage of calcium may occur for many months in women over 50 years of age when the diet is improved by adding milk. This is partly explained on the basis of replacement of calcium previously lost from the bones when poor diets were eaten. The adequacy of the diet in respect to other nutrients also affects the retention of calcium.

Pearl Swanson, Charlotte Roderuck, Esther Batchelder, Elisabeth Willis, Margaret Ross and Katherine Sholtz of the Iowa Agricultural Experiment Station are working on these studies.

Compare Infra-Red And Conventional Cooking Methods

UNTRAINED JUDGES could not find differences in the quality of food broiled by infra-red lamp units as compared with food broiled by conventional electric units. Elizabeth Beveridge of the Experiment Station reports that untrained judges were used for this test because they are more representative of the people who would form the potential market for infra-red cooking equipment than are judges trained in quality testing.

The food judged was confined to a great extent to broiled products—such as ground beef patties, steaks, halibut steaks and sausage—in the experiment just completed. Earlier tests showed time advantages for broiling with infra-red rays. Further time comparisons are planned.